PERMIT STATEMENT OF BASIS

Title V draft permit **No. V-97-040**
AK STEEL CORPORATION-ASHLAND WORKS-(COKE PLANT)
ASHLAND, KENTUCKY
May 2, 2000
REVIEWERS: JILL BERTELSON, SUMIT SINGH, AND STUART ECTON

SOURCE DESCRIPTION:

AK Steel operates a metallurgical coke manufacturing plant which consists of coal handling facilities; coke oven batteries #3 (short, 76 ovens) and #4 (short, 70 ovens) with associated larry cars, pushing cars, quench cars and quench towers; coke handling; coke oven gas byproducts recovery plant including Sulfiban sulfur recovery plant; boilers (i.e. steam-generating units, indirect heat exchangers); emergency flares and an excess coke oven gas flare; and associated air pollution control equipment.

MET environmental owns and operates a wastewater treatment plant on property owned by AK Steel. This plant will treat waste weak ammonia liquor form the byproducts recovery plant and recycle acid gas back to the sulfur recovery unit. For Title V purposes, the wastewater treatment plant is not considered part of the coke plant and is not included in the draft permit.

Battery underfiring, boilers, and the Sulfiban plant use clean coke oven gas as a fuel. The boilers use natural gas a secondary fuel. Any clean coke oven gas not combusted in the underfiring, boilers, or elsewhere in the plant goes to the excess coke oven gas flare before being vented to the atmosphere.

AK Steel currently produces about 1 million tons of coke each year.

See attached the description of the metallurgical coke manufacturing process excerpted from USEPA publication AP-42 and AK Steel's process schematics excerpted from the application.

COMMENTS:

Types of controls and efficiency:

- ⇨ Coal and coke handling particulate emissions are controlled with wet suppression (99% at coal crushing, 98% for the rest).
- ⇨ Coke oven emissions from the charging process are controlled using stage charging (99.9%)
- ⇨ Coke oven emissions from coke oven doors, topside ports, and offtakes are controlled using work practice standards and inspection. Luting material is used to seal leaking doors, ports, and offtakes (98.9%, 99.6%)
- ⇨ Coke oven emissions during coke pushing are controlled by hood cars that are to be re-designed and installed pursuant to Agreed Order DAQ-97010. A baghouse controls the captured emissions (99.23% capture, 98.15% baghouse)

COMMENTS (CONTINUED):

- ⇨ Quenching emissions are captured by baffles in the quench tower (72.6%).
- ⇨ Emissions (primarily benzene, toluene, xylene, and phenol) from the coke oven gas recovery plant are controlled with gas blanketing and a leak detection and repair program for pipeline equipment that handles and processes the recovered by-products (100%).
- ⇨ SO_2 emissions from the combustion of coke oven gas in battery underfiring, boilers, and flares are controlled by coke oven gas desulfurization in the Sulfiban plant (99%). An incinerator on the Sulfiban controls tail gas emissions by oxidizing H_2S to SO_2 prior to venting to the atmosphere (93.5% for SO_2).
- ⇨ Emergency venting from the coke ovens during the coking process is controlled by the emergency flares (>99%).
- ⇨ Clean coke oven gas not combusted elsewhere in the plant are combusted in the excess coke oven gas flare (>99%).

Emission factors are based on AP-42, observations, and material balance.

Applicable regulations:

401 KAR 51:017, Prevention of significant deterioration of air quality (previous BACT/LAER determinations).
401 KAR 57:035 (40 CFR 61 Subpart V), National emission standards for equipment leaks
401 KAR 57:130 (40 CFR 61 Subpart L), National emission standard for benzene emissions from coke by-product recovery plants.
401 KAR 59:010, New process operations.
401 KAR 61:020, Existing process operations.
401 KAR 59:015, New indirect heat exchangers
401 KAR 61:015, Existing indirect heat exchangers
401 KAR 61:140, Existing by-product coke manufacturing plants.
401 KAR 63:010, Fugitive emissions.
401 KAR 63:015, Flares.
401 KAR 63:300 (40 CFR 63 Subpart L), National emission standards for coke oven batteries

NOTES:

MACT standards for underfiring, pushing, and quenching operations at the batteries are due in 2000.
Residual risk standards for current MACT standards are due in 2003.

- Coal and coke handling are under Kentucky regulations for process operations along with a previous PSD determination.
- Coke oven battery 3 is under Kentucky regulations for coke oven batteries and federal MACT regulations for coke oven batteries.
- Coke oven battery 4 is under Kentucky regulations for process operations along with a previous PSD determination, and federal MACT regulations for coke oven batteries.
- The byproducts recovery plant is under federal NESHAP regulations for benzene.
- The sulfur recovery plant is under Kentucky regulations for coke oven batteries.
- The boilers are under Kentucky regulations for indirect heat exchangers. Construction dates exempt them from federal NSPS regulations for steam generating units.
- All flares are under Kentucky regulations for flares. The emergency flares are also regulated under the federal MACT standards for coke oven batteries.

NOTES (CONTINUED):

- Combustion of clean coke oven gas in battery underfiring, boilers, excess coke oven gas flare, and the sulfur recovery plant is regulated by Kentucky standards for coke oven batteries.
- Emissions of NO_x and other VOCs are not directly regulated under the applicable standards.